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ABSTRACT

Much Catholic school and church rhetoric suggests that Catholic schools possess distinctive learning environments. However, little empirical evidence has been found to support this assertion. Research has been hampered by the lack of an appropriate assessment instrument. This paper describes the development of a seven-scale instrument to assess student perceptions of classroom psychosocial environments in Catholic schools. The instrument assessed student affiliation, interactions, cooperation, task orientation, order and organization, individualization, and teacher control. The instrument was used in a survey of 80 Catholic and 24 government classes in 32 schools. Findings revealed that the government schools scored significantly higher than the Catholic schools on the interaction and task orientation scales. A comparison of the environments of religion and science classes in Catholic schools indicated negligible differences on all scales except task orientation. The perceptions of 9th- and 12th-graders differed significantly in all scales except interactions. Girls perceived classrooms more positively than did boys. In general, the data suggest that the distinctive nature of Catholic schooling did not extend to all classroom environment dimensions deemed important to Catholic education. Moreover, government schools were perceived to be better organized, more conducive to positive teacher-student interactions, and more task oriented than Catholic schools. Four figures and four tables are included. (Contains 80 references.) (Author/LMI)

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RHETORIC AND REALITY: A STUDY OF CLASSROOM ENVIRONMENT IN CATHOLIC AND GOVERNMENT SECONDARY SCHOOLS

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Abstract

Much Catholic school and church rhetoric suggests that Catholic schools possess distinctive learning environments. However, little empirical evidence in support of this assertion appears in the literature. Research into this aspect of Catholic schooling has been hampered by the lack of an appropriate assessment instrument. By drawing on contemporary church literature, the perceptions of personnel involved in Catholic education and existing classroom environment questionnaires, a seven-scale instrument was developed to assess student perceptions of classroom psychosocial environment in Catholic schools. This instrument assesses Student Affiliation, Interactions, Cooperation, Task Orientation, Order and Organisation, Individualisation and Teacher Control. The use of this instrument in 104 classrooms in Catholic and Government schools in Australia revealed significant differences between Catholic and Government schools on the Interaction and Task Orientation scales. However, on these scales, the Government schools scored significantly higher than the Catholic schools. A comparison of the environments of religion and science classes in Catholic schools revealed negligible differences on all scales except Task Orientation. Significant differences between grade 9 and grade 12 were found for all scales except Interactions. A comparison of boys' and girls' perceptions for coeducational classes showed a distinct pattern with girls perceiving classrooms more positively than boys. In general, the results show that the distinctive nature of Catholic schooling does not extend to all classroom environment dimensions deemed important to Catholic education. Moreover, Government schools were perceived to be better organised, have more positive teacher-student interactions and greater task orientation than Catholic schools.

This paper, which reports on classroom environment research conducted in Australian Catholic and Government schools, is organised into four main parts. First, background information about classroom environment research and Catholic education in Australia is provided. Second, the development and validation of an instrument that assesses the important dimensions of the classroom environment of Australian Catholic secondary schools is reported. Third, four investigations that use classroom environment scales as criterion variables are presented. These investigations involved four determinants of envirionment: school type (Catholic, Government), grade level (grade 9, grade 12), subject (science, religion) and gender (boy, girl perceptions of the same class). Fourth, the paper discusses briefly the educational importance of the empirical results. The study described here is unique in that its starting point is the nature of Catholic education expressed in Catholic church and school literature and by the wider Catholic education community. It is educationally important because it is the first Australian attempt to match the rhetoric of the Catholic church and school communities with the reality of Catholic schools as perceived by students. The overall purpose of this research was to ascertain the extent to which Catholic school classrooms have a distinctive environment and whether practices in Catholic school classrooms is consistent with the rhetoric expressed in church and school literature.

BACKGROUND

Classroom Environment

During the past 25 years, considerable progress has been made in the conceptualisation, measurement and investigation of psychosocial dimensions of the learning environment in primary, secondary and tertiary educational settings (see e.g., Chavez, 1984; Fraser, 1986, 1991, 1994; MacAuley, 1990). Since the late 1960s, new classroom environment instruments have been developed and research programs have investigated a wide range of issues that are important to student learning in many educational settings. Classroom environment has become an important and dynamic field of research, especially in the United States and Australia.

The predominant approach to classroom and school environment research has been to use the perceptions of teachers and students as measures of the environment. Table 1 provides an overview of the major perceptual measures of classroom environment developed over the past 25 years. Apart from the revised version of the Constructivist Learning

TABLE 1

OVERVIEW OF EIGHT INSTRUMENTS FOR ASSESSING CLASSROOM ENVIRONMENT

Instrument	Level	Items per scale	Scales Assessed by Instrument	Reference
Learning Environment Inventory (LEI)	Secondary	7	Cohesiveness, Friction, Favouritism, Cliqueness, Satisfaction, Apathy, Speed, Difficulty, Competitiveness, Diversity, Diversity, Formality, Material Environment	Fraser, Anderson, & Walberg (1982)
Classroom Environment Scale (CES)	Secondary	10	Involvement, Affiliation, Teacher Support, Task Orientation, Competition, Order & Organisation, Rule Clarity, Teacher Control	Moos & Trickett (1987)
Individualised Classroom Environment Questionnaire (ICEQ)	Secondary	10	Personalisation, Participation, Independence, Investigation, Differentiation	Fraser (1990)
My Class Inventory (MCI)	Primary	6-9	Student Cohesiveness, Friction, Satisfaction, Difficulty, Competitiveness	Fraser, Anderson, & Walberg (1982)
College and University Classroom Environment Inventory (CUCEI)	Tertiary	7	Personalisation, Involvement, Student Cohesiveness, Satisfaction, Task Orientation, Innovation, Individualisation	Fraser & Treagust (1986)
Science Laboratory Environment Inventory (SLEI)	Secondary, Tertiary	7	Student Cohesiveness, Open-Endedness, Rule Clarity, Material Environment	Fraser, McRobbie, & Giddings (1993)
Constructivist Learning Environment Survey (CLES) (revised version)	Secondary	7	Personal Relevance, Uncertainty, Critical Voice, Shared Control, Student Negotiation	Taylor, Fraser, & White (1994)
Questionnaire on Teacher Interaction (QTI)	Primary, Secondary	7-9	Leadership, Helpful/Friendly, Understanding, Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing, Strict	Wubbels & Levy (1993)

Environment Survey (CLES; Taylor, Fraser, & White, 1994), these instruments have been validated and used in a range of studies (see Fraser, 1994). For example, the ICEQ (Fraser, 1990) was developed specifically to assess those classroom environment dimensions which differentiate individualised, open or enquiry-based classrooms from conventional classrooms. The Science Laboratory Environment Inventory (SLEI; Fraser, Giddings, & McRobbie, 1992; Fraser, McRobbie, & Giddings, 1993) focuses on the particular characteristics of the upper secondary and tertiary science laboratory class, a setting which has received relatively little attention in learning environment research (Hegarty-Hazel, 1990). The development of the CLES, which assesses the extent to which a classroom environment is consistent with a constructivist epistemology, shows the responsiveness of this domain of research to current philosophical trends. Recent research in The Netherlands has assessed the quality of teacher-student interaction in school settings with the Quality of Teacher Interaction (QTI; Wubbels & Levy, 1993).

An emerging trend in learning environment research has been the use of existing instruments as the bases for the development of context-specific instruments. Researchers, administrators and teachers can select or modify scales to suit their particular needs. Furthermore, the use of instruments in conjunction with qualitative data collection methods is becoming accepted as a desirable direction for methodology of learning environment research (Fraser & Tobin, 1991).

The strongest tradition in past classroom environment research has involved investigation of associations between student cognitive and affective outcomes and their perceptions of the learning environment (Fraser & Fisher, 1982; Fraser, 1994; Henderson, Fisher, & Fraser, 1994; McRobbie & Fraser, 1993a). Past research provides strong support for the predictive validity of student perceptions in accounting for appreciable amounts of variance in learning outcomes, beyond that attributable to student characteristics. Haertel, Walberg and Haertel's (1981) meta-analysis of 634 correlations from 823 classes in eight subject areas containing 17 805 students in four nations supported this view. Enhanced student achievement was found in classes characterised by greater Cohesiveness, Satisfaction and Goal Direction and less Disorganisation and Friction. Recent studies confirm the link between classroom environment and student outcomes. McRobbie and Fraser's study used a sample of 92 chemistry classes in Brisbane secondary schools to establish overall relationships between learning outcomes and dimensions of the science laboratory classroom environment assessed by the SLEI. A German study conducted by Koeller and Bolte (1994) used an instrument called the Kieler Learning Climate Questionnaire to show that 60% of the variance in perceived student satisfaction with

chemistry instruction was explained by different learning environment variables. Wong and Fraser (1994) employed the SLEI to establish positive associations between Student Cohesiveness, Integration, Rule Clarity and Material Environment and students' attitudes to chemistry.

In addition to outcome-environment studies, researchers in various countries have used student perceptions of classroom environment as criterion variables to ascertain which independent variables influence classroom environment. Past studies fall into one of three categories: evaluations of educational innovations, differences between student and teacher perceptions of actual and preferred environment, and studies involving other independent variables.

Despite this starting point, the incorporation of classroom environment research in evaluation studies remains at a quite low level. That is, investigating how an educational innovation impacts on the learning environment has been a neglected research direction. One example of the assessment of learning environment in curriculum evaluation is Fraser's (1979) study on the impact of the Australian Science Education Project (ASEP) in secondary school science classrooms. Compared to a control group, students in ASEP classes perceived their classes to have higher Individualisation and Satisfaction and a better Material Environment. Cort (1979) investigated the impact of Man: A Course of Study (MACOS) among a sample of classes in the USA. Compared to non-MACOS classes, MACOS classes were found, on average, to be more satisfying, less difficult and less apathetic. However, Cort reports that some non-MACOS classes had more positive classroom environments than MACOS classes. Teh and Fraser's (in press) evaluation of computer-assisted learning is a recent example of an evaluation study involving the assessment of learning environment.

Research in the United States (Moos, 1979), Australia (Fraser, 1982), The Netherlands (Wubbels, Brekelmans, & Hooymayers, 1991) and Israel (Raviv, Raviv, & Reisel, 1990) compared students' and teachers' perceptions of classroom environment and found that students perceived their classrooms more positively than teachers. Also, both students and teachers preferred a more positive classroom environment than they actually perceived.

Classroom environment instruments have been used to facilitate improvements in classroom environments. Typically, the results obtained through the application of a classroom environment instrument are used by teachers to suggest changes in classroom practice. Over the past decade, several studies have been conducted in this area (e.g.

Fraser, Seddon, & Eagleson, 1982; Fraser & Fisher, 1986; Thorpe, Burden, & Fraser, in press). Other studies have investigated the influence of a host of independent variables on classroom environment: class size (Anderson & Walberg, 1972; Walberg, 1969), year level (Welch, 1979), student gender (Fraser, McRobbie, & Giddings, in press; Lawrenz, 1987; Owens & Straton, 1980; Wong & Fraser, 1994), teacher gender (Anderson, 1971; Lawrenz & Welch, 1983), subject matter (Tamir & Caridin, 1993) and school type (Trickett, 1978; Trickett, Trickett, Castro, & Schaffner, 1982).

Some areas of contemporary classroom environment research include investigating classroom environment changes during the transition between primary and secondary schools (Midgley, Eccles, & Feldlaufer, 1991), assessing computer-assisted learning environments (Maor & Fraser, in press; Ortiz, 1993; Teh & Fraser, in press), exploring links between classroom, school, work and family environments (Moos, 1991), incorporating the assessment of learning environment in preservice and inservice teacher education courses (Fisher & Fraser, 1992), studying the learning environments of student teaching (Duschl & Waxman, 1991) and developing typologies of classrooms based on classroom environment assessments (McRobbie & Fraser, 1993b).

Clearly, much progress has been made in the conceptualisation and assessment of learning environments. Instrument development is progressing on at least two fronts: the development of *Personal Forms* of existing instruments and incorporating theoretical positions in instrument development. Nearly all existing instruments require students to respond in terms of the class as a whole. Personal Forms of instruments require students to respond in terms of their own role in the classroom rather than in terms of the whole class.

Instruments that reflect particular epistemologies (e.g. constructivism) or strong theoretical views about curriculum are underpinning some instruments. For example, Bowen (in press) has developed a curriculum theory-based classroom environment instrument called the Technical and Emancipatory Classroom Environment Instrument which assesses the technical and emancipatory cognitive interests in the classroom using five scales: Development of Goals, Power Relationships, Development of Curricular Plan, Implementation of Curriculum Plan and Content Knowledge. Other recent research directions have included the incorporation of non-verbal communication in learning environment research (O'Hair, 1994), using classroom environment findings to assist school psychologists (Burden & Fraser, in press), using qualitative data collection methods to capture the richness and depth of a particular setting (Templeton, 1994) and

investigating school professional learning environments (Claudet & Ellett, 1994; Loup & Ellett, 1994).

Catholic Education

Much Catholic church and school rhetoric suggest that Catholic schools possess distinctive learning environments. The original and continued official view of the Catholic church is that, in some way, religious faith permeates the whole of the curriculum (Leavey, 1993). This was implicit in the original foundation of the Australian schools last century, and has been restated in the four official papers on Catholic education since the Second Vatican Council (Vatican II) of 1962-1965. Church documents spanning 130 years indicate that the Catholic school was to have an atmosphere consistent with Church doctrines (Geoghegan, 1860; Provincial Synod, 1862, 1869), enlivened by the gospel spirit (Abbott, 1966) and dependent not so much on subject matter or methodology as on the people who work there (Sacred Congregation for Catholic Education, 1977). Bathersby, the present Archbishop of Brisbane, asserted recently:

> It would be a complete misunderstanding to see the Catholic school just as any other, with a daily religion lesson added. Important as the religion program is, it is only part of the difference. The whole atmosphere of the school is one of shared faith where parents, teachers and students come together in prayer and action to live the gospel of Jesus. For the young, the witnesses of faith-filled adults, teachers and parents, provide a lesson and encouragement that no text book can replace. (Bathersby, 1992, p. 2)

From the Catholic viewpoint, education is holistic with the religious dimension penetrating the entire school. Conceptually, the notion of having parcels of religion interspersed with parcels of secular knowledge has been rejected strongly. The rhetoric of the Catholic church and its schools supports the view that the Catholic school and its classrooms are permeated by a Catholic ethos which manifests itself in distinctive classroom environments. This assertion has not been substantiated by empirical evidence. In the past 25 years, a limited amount of research has touched upon, but not involved in detail, the classroom environment of Australian Catholic secondary schools (Flynn, 1975, 1985, 1993; Leavey, 1972). These studies have involved Catholic schools only, and accordingly it has been impossible to judge the classroom environment of Catholic schools compared to Government schools.

INSTRUMENT DEVELOPMENT AND VALIDATION

The general procedure adopted was to use existing classroom environment instruments as bases for the construction of an instrument that would encompass the important dimensions of a typical Catholic school classroom. This task was simplified by the considerable research efforts in this area to date. Existing scales and associated items needed to be modified and supplemented by new scales so as to tap distinctive environment dimensions. The intuitive-rational approach to instrument development (Fraser, 1986), which relies on the researchers' intuitive understandings of the dimensions being assessed, was adopted. Drawing on the work of previous learning environment researchers, four development criteria were established:

- Consistency with literature. The instrument was to be consistent with literature on the purpose and mission of Australian Catholic schooling (e.g., Brennan, 1990; Britt, 1975; Collins, 1991; Flynn, 1993; Queensland Catholic Education Commission, 1978, 1979).

- Coverage of Moos's three general categories. The final form of the instrument was designed to cover Moos's (1979) three categories of human environments: Relationship Dimensions (the nature and intensity of personal relationships), Personal Growth Dimensions (personal development and self-enhancement) and System Maintenance and Change Dimensions (extent to which the environment is orderly, clear in expectations, maintains control and is responsive to change).

- Salience to stakeholders. In order for the instrument to tap salient dimensions, it was considered important for administrators and teachers to be involved in the development process. The salience for stakeholders was established by four reference groups: a panel of 16 school principals who participated in a two-hour workshop conducted by the researcher; eight academic colleagues from the Faculty of Education of the Queensland division of the Australian Catholic University; a panel of 14 practising teachers who were involved in postgraduate study at the Queensland division of the Australian Catholic University; and colleagues with expertise in the study of learning environments. Clearly the first three groups were involved integrally in Catholic education and their contributions enhanced the instrument's ability to focus on contemporary Australian Catholic schooling.

- Economy. As teachers face considerable time pressures during the school day, it was considered important that the final instruments be economical in terms of the time needed for administration and scoring.

Using these criteria, a seven-scale instrument with 66 items with responses recorded on a five-point Likert scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree) was developed. Table 1 shows the names, descriptions, sources and number of items for each scale.

TABLE 1

SCALE NAME, DESCRIPTION, MOOS'S CATEGORY, SOURCES AND NUMBER OF ITEMS FOR SEVEN CLASSROOM ENVIRONMENT SCALES

Scale Name	Moos's Category	Scale Description	Source of Scale	Number of Items
Student Affiliation	R	Extent to which students know, help and are friendly towards each other.	Learning Environment Inventory (LEI) (Fraser, Anderson & Walberg, 1982) Classroom Environment Scale (CES) (Moos & Trickett, 1987)	9
Task Orientation	P	Extent to which it is important to complete activities planned and to stay on the subject matter.	CES	9
Order & Organisation	S	Emphasis on students behaving in an orderly, quiet and polite manner, and on the overall organisation of classroom activities.	CES	10
Individual-isation	S	Extent to which students are allowed to make decisions and are treated differently according to ability, interest and rate of working.	College & University Classroom Environment Inventory (CUCEI) (Fraser & Treagust,1986) Individualised Classroom Environment Questionnaire (ICEQ) (Fraser, 1990)	9
Teacher Control	S	The number of rules, how strictly rules are enforced and how severely infractions are punished.	CES	9
Interactions	R	Extent to which teacher-student interactions emphasise a Christian concern for the personal welfare and social growth of the student.	Researcher, with three items from the CUCEI Personalisation scale	10
Cooperation	P	Extent to which students cooperate rather than compete with each other.	Researcher, with some influence of LEI Competitiveness scale	10

R: Relationship Dimension; P: Personal Dimension; S: System Maintenance and Change Dimension

Validation Sample

The validation data reported here are based on a sample of 2211 students from a total of 104 classes in 20 Catholic and 12 Government secondary schools in Queensland, Australia. The schools were from metropolitan Brisbane and provincial cities and towns of Queensland. The classes surveyed were grade 9 and grade 12 classes of science and religion. Because the class mean was used as the unit of analysis in many of the study's analyses, validation data for both the individual and class mean as units of analysis were determined as recommended by Sirotnik (1980).

Item and Factor Analyses

Data were subjected to factor and item analyses. Principal components factor analysis (with varimax rotation) using the individual as the unit of analysis extracted seven factors accounting for 41.3% of the variance. A similar analysis using the class mean as the unit of analysis showed the same seven factors accounting for 69.4% of the variance. In both analyses, the factor structure was consistent with the 7 a priori scales in Table 1. Item-scale correlations confirmed that all items had been assigned to the appropriate scale and that each item made an appreciable contribution to that scale's internal consistency.

Internal Consistency Reliability

Estimates of the internal consistency of the seven scales of the classroom instrument were calculated using Cronbach's alpha coefficient for the above sample. Table 2 shows the alpha reliability coefficient for each scale of the classroom instrument using the individual student and class mean as units of statistical analysis. As expected, alpha reliability coefficients based on class means are somewhat larger than those obtained with the individual as the unit of analysis. The values of the alpha coefficient suggest that each scale of the instrument has acceptable internal consistency for either the individual or the class mean as the unit of analysis.

Discriminant Validity

Table 2 also reports data about discriminant validity using the mean correlation of a scale with the other six other scales as a convenient index. These data indicate that the scales do overlap but not to the extent that would violate the psychometric structure of the instrument.

TABLE 2

ALPHA RELIABILITIES AND MEAN CORRELATION WITH OTHER SCALES
FOR TWO UNITS OF ANALYSIS
(N=2211 students; 104 class means)

Scale	Alpha Reliability Coefficient		Mean Correlation with Other Scales	
	Student	Class mean	Student	Class mean
Student Affiliation	0.69	0.84	0.22	0.32
Interactions	0.90	0.97	0.29	0.36
Cooperation	0.71	0.83	0.28	0.36
Task Orientation	0.76	0.90	0.33	0.32
Order & Organisation	0.84	0.95	0.33	0.36
Individualisation	0.54	0.80	0.15	0.34
Teacher Control	0.75	0.88	0.22	0.28

Ability to Differentiate Between Classes

One-way ANOVAs for classroom environment scales with the student as the unit of analysis and class membership as the main effect showed that each scale of the instrument differentiated between classes. The results of these analyses are shown in Table 3 and indicate that all seven scales differentiated significantly between classes ($p < .001$). The eta^2 statistic, which is a ratio of 'between' to 'total' sums of squares (Cohen & Cohen, 1975), indicates that the proportion of variance explained by class membership ranged from 7% for the Task Orientation scale to 27% for the Interactions scale.

TABLE 3

ANOVA RESULTS FOR CLASS MEMBERSHIP DIFFERENCES IN
STUDENT PERCEPTIONS OF CLASSROOM ENVIRONMENT

Scale	MS Between	MS Within	df	F	Eta^2
Student Affiliation	18.7	8.6	103, 2107	2.2*	0.10
Interactions	199.0	26.7	103, 2107	7.5*	0.27
Cooperation	44.1	11.9	103, 2107	3.7*	0.15
Task Orientation	14.5	8.8	103, 2107	1.6*	0.07
Order & Organisation	50.5	11.9	103, 2107	4.2*	0.17
Individualisation	42.2	11.1	103, 2107	3.8*	0.16
Teacher Control	33.9	9.1	103, 2107	3.7*	0.15

*$p < .001$

DIFFERENCES IN CLASSROOM ENVIRONMENTS

Design of Study

This section reports on four investigations using the seven classroom environment scales as dependent variables and school type, grade level, subject type and gender as independent variables. Data collected from the sample of 2211 Catholic and Government secondary school students (in 104 classes) used for instrument validation were analysed through multivariate analysis of variance (MANOVA).

Participating schools were grouped into three types: Catholic non-order (10 schools), Catholic order (10 schools) and Government (12 schools). Catholic non-order schools are lay administered and coeducational. By contrast, Catholic order schools are either owned or administered by a religious order (e.g. Sisters of Mercy, Christian Brothers). These schools are single-sex, with the sample used in this study consisting of five boys' schools and five girls' schools. In each of the Catholic schools, one class of grade 9 science, grade 9 religion, grade 12 science and grade 12 religion was surveyed. One class of grade 9 science and grade 12 science was surveyed in the Government schools. Table 4 describes the classes in the sample. Both the schools and the classes in each school were considered to be representative samples of school and subject type. In all analyses, class means were calculated and subsequently used as the unit of analysis. Because the design of the study required the comparison of classroom environments as perceived by all of the students in the class (i.e. consensual press), the use the class mean as the unit of analysis was considered appropriate.

TABLE 4

DESCRIPTION OF CLASSES IN THE SAMPLE

	School Type		
Class	Catholic non-order	Catholic order	Government
Grade 9 Religion	10	10	-
Grade 9 Science	10	10	12
Grade 12 Religion	10	10	-
Grade 12 Science	10	10	12
TOTAL	40	40	24

Differences Between the Classroom Environments of Catholic Non-order, Catholic Order and Government Schools

A two-way MANOVA, with the set of seven classroom environment scales as the dependent variables and school type and grade level as the dependent variables, was performed. The school type by grade level interaction was not significant. Because the school type effect was significant ($p < .001$) in the multivariate analysis, univariate F tests were interpreted. These tests revealed that the three school types differed significantly on Interactions [$F(2,98) = 5.96$ ($p < .05$)] and Task Orientation [$F(2,98) = 7.84$ ($p < .05$)]. Tukey's post-hoc procedure showed that the significant differences were between the Catholic non-order and Government schools for the Interactions scale, with Government school classrooms perceived to have higher levels of teacher-student interaction than Catholic school classrooms. For the Task Orientation scale, the significant differences were between Catholic non-order and Government schools, and Catholic order and Government schools. Again, the Government school classrooms scored higher than the Catholic schools (see Figure 1). Figure 1 also shows that Government schools were higher on Order and Organisation that Catholic schools, but that little difference between the school types is evidenced for the remaining four scales.

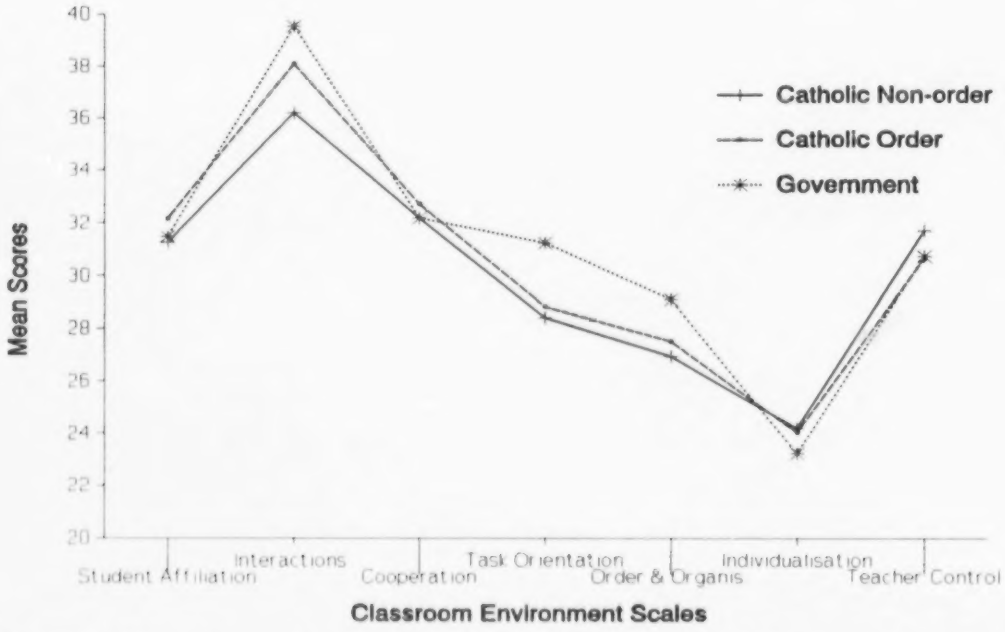

Figure 1 Mean Scores for Catholic Non-order, Catholic Order and Government Schools for Seven Classroom Environment Scales. (N = 104 class means)

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Differences Between the Environments of Grade 9 and Grade 12 Classes

In the MANOVA described above, the effect of grade level was significant ($p < .001$). Univariate F tests investigating the effect of grade level on classroom environment were significant ($p < .05$) for six of the seven scales: Student Affiliation [$F(1,98) = 16.57$], Cooperation [$F(1,98) = 5.09$], Task Orientation [$F(1,98) = 9.19$], Order and Organisation [$F(1,98) = 3.93$], Individualisation [$F(1,98) = 13.09$], and Teacher Control [$F(1,98) = 18.23$]. The sample data are graphed in Figure 2 and clearly indicate the different perceptions of classroom environments reported by grade 9 and grade 12 students. Separate profiles of the scale means for Catholic and Government schools indicated that differences in the perceptions of environment by grade 9 and grade 12 students in Catholic schools are very similar to the differences found in Government schools.

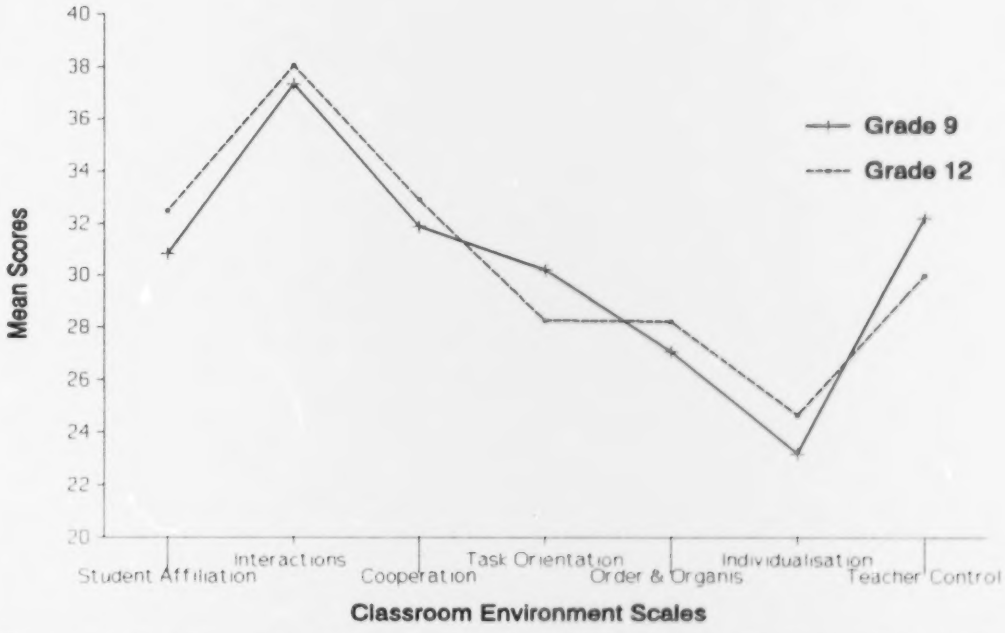

Figure 2 Mean Scores for Grade 9 and 12 Classes for Seven Classroom Environment Scales. (N = 104 class means)

Differences Between the Environments of Religion and Science Classes in Catholic Schools

The 80 class means from the Catholic schools for each of the seven environment scales were analysed using a three-way MANOVA with school type (Catholic non-order, Catholic order), grade level (grade 9, grade 12) and subject (religion, science) as the between-subjects effects. A three-way MANOVA was preferred to a one-way analysis because of the possibility of interaction effects. No interaction effects were significant ($p < .05$). The three main effects were significant (subject type, $p < .001$; school type, $p < .01$; grade level, $p < .001$). For the effect of subject type, univariate F tests revealed that Task Orientation was the only statistically significant scale, [$F(1,72) = 11.93$ ($p < .05$)]. Figure 3 illustrates the results. Of note are the negligible differences between the scores of religion and science classes on all of the scales apart from Task Orientation. The fact that the overall MANOVA result was significant and that Task Orientation was the only significant scale are important findings.

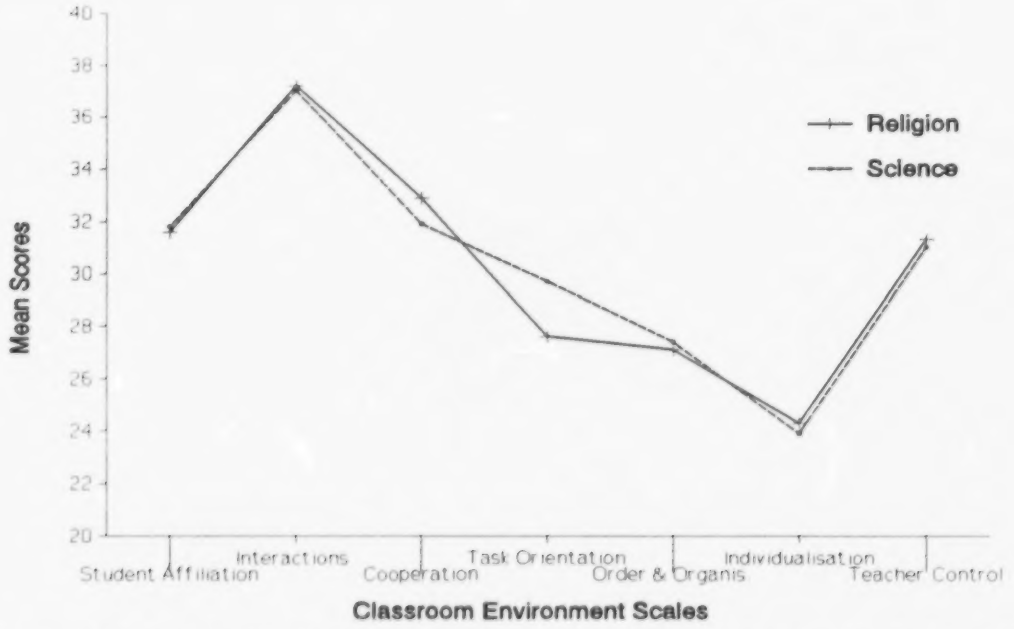

Figure 3 Mean Scores For Religion and Science Classes in Catholic Schools for Seven Classroom Environment Scales. (N = 80 class means)

Differences Between the Classroom Environment Perceptions of Boys and Girls in the Same Coeducational Class

Because data collection sites in this study included 64 coeducational classrooms (40 Catholic, 24 Government), it was possible to examine differences between boy and girl perceptions of the same class. Class means for boys and girls for each of the 64 classes were calculated for each of the seven classroom environment scales. Thus, the data set used for this analysis consisted of 64 pairs of class *gender means* for each of the seven classroom environment scales. A repeated measures MANOVA with gender as the within-subjects effect was used. To check on possible interaction effects, school type and grade level were included in the analysis as between-subjects effects. Results indicated that there were no significant interaction effects. The MANOVA results for gender as the main effect were significant ($p < .001$). Univariate F tests were significant ($p < .05$) on five of the seven scales: Interactions [$F(1,60) = 7.41$], Cooperation [$F(1,60) = 21.68$], Task Orientation [$F(1,60) = 5.50$], Individualisation [$F(1,60) = 9.48$], and Teacher Control [$F(1,60) = 4.03$]. Figure 4 shows the mean scores for boys and girls in coeducational classes for the seven classroom environment scales.

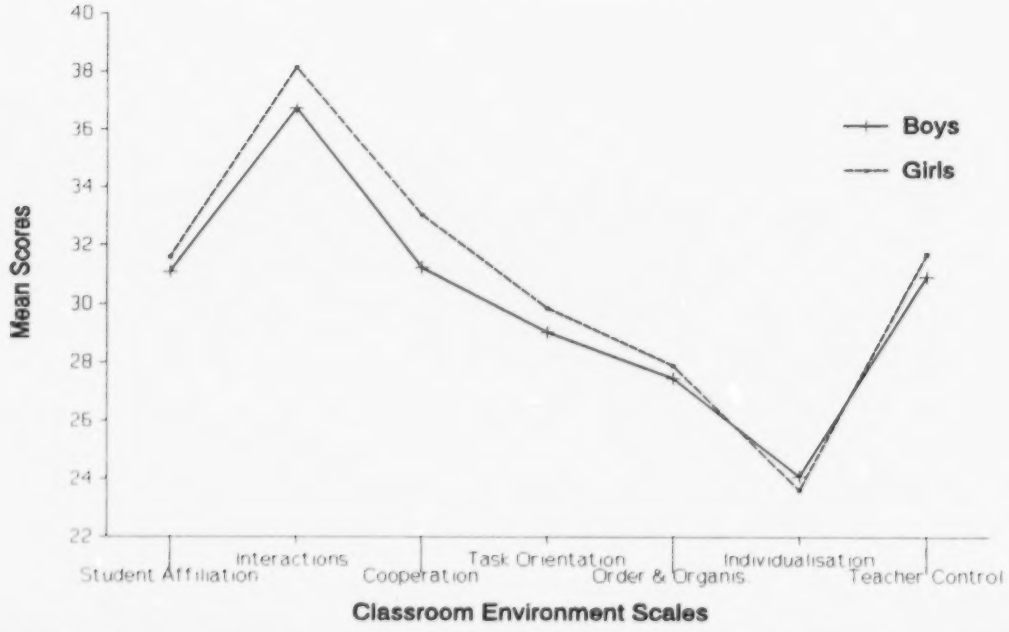

Figure 4 Mean Scores for Boys and Girls in Coeducational Classes for Seven Classroom Environment Scales. (N = 64 pairs of class gender means)

Of interest is the consistent pattern in the direction of the differences between girls' and boys' perceptions of the same classroom. Relative to boys, girls perceived the classroom to have higher levels of Student Affiliation, Interaction, Cooperation, Task Orientation, Order and Organisation and Teacher Control but lower levels of Individualisation. The low score for both sexes on Individualisation is noteworthy. Separate profiles of the scale means for Catholic and Government schools showed that differences in the perceptions of environment by boys and girls in Catholic schools are very similar to the differences found in Government schools.

DISCUSSION

The rhetoric of Catholic church and school documents is that Catholic schools possess distinctive environments. Implicit in such a statement is the view that Catholic schools have a different (and more positive) environment when compared with Government schools. If these pronouncements are true, one reasonably could expect the scores for Catholic schools to be higher than the Government schools on classroom environment dimensions, especially the scales of Student Affiliation and Interactions (which assess relationship dimensions) and Cooperation and Task Orientation (which assess personal development dimensions). However, this study of 80 Catholic and 24 Government school classes in 32 schools revealed that Government schools scored significantly higher than both types of Catholic schools on Interactions and higher than Catholic non-order schools on Task Orientation — quite the reverse of that suggested in the literature. The rhetoric of the literature and stakeholders is at odds with the findings of this study.

The empirical findings of this study are in general agreement with those of Randhawa's (1991) study which used the 15-scale Learning Environment Inventory (Fraser, Anderson & Walberg, 1982) to compare the classroom environments of two single-sex parochial schools with a secular school in Canada. For example, Randhawa found significantly higher scores for the boys' parochial school compared to the secular school on Cohesiveness, Friction, Favouritism, Disorganisation and Competitiveness, but significantly lower scores on Goal Direction and Democracy. Apart from the Cohesiveness scale, the results of the present study are consistent with the findings of the Canadian study.

An emergent issue is this study was the difference between the environment of Catholic non-order and Catholic order schools. Folklore suggests that order schools (being more established and permeated by the order's charism) have a distinctive (and superior)

environment compared to Catholic non-order schools. The evidence from this study does not support this assertion. The presence of a religious order does not appear to be associated with a distinctive environment. It should be noted that the pooled data from the order schools were aggregated from 5 boys' schools and 5 girls' schools and that further data analysis will be conducted in this area, especially in the comparison of the classroom environments of Catholic girls' and boys' schools.

The comparison of grade 9 and grade 12 classes shows that grade 12 students perceived their environments to have greater Student Affiliation, teacher-student Interactions , Cooperation, Order and Organisation, and Individualisation, but lower Task Orientation and Teacher Control. These results are remarkably consistent with previous research on the effect of grade level on classroom environment (see Shaw & Mackinnon, 1973; Randhawa & Michayluk, 1975; Welch, 1979). Shaw and Mackinnon showed that, as grade level increased from grade 9 to grade 12, Formality, Favouritism, and Goal Direction decreased while Democracy decreased. Welch found that, relative to high school students, junior high school students perceived their classes as less Democratic but with more Disorganisation, Formality, Friction, Cliqueness and Favouritism.

The comparison of religion and science classes provided evidence that religion and science classes are perceived by students in very similar ways. This is remarkable because religion and science teachers tend to view the subjects as vastly different in content, style and opportunities for flexibility in the classroom. An emphasis on content coverage is consistent with an objectivist epistemology. Within this epistemology, a lecture format is the favoured mode of information transmission (Roth, 1994). One would hope that religion teaching would be process-oriented with a high emphasis on the attainment of student-generated goals rather than using information transmission approaches. Indeed, religion classes should provide clear opportunities for the class teacher to meet the needs of students in a genuine way without the constraints due to content coverage.

On the basis of the evidence presented here, it could be argued that religion classes are being taught much like science classes. At the very least, students are perceiving the environments of these two subjects in similar ways. The significantly higher task orientation of science compared to religion reflects a view that religion classes do not have to be taken as seriously as science, and reinforces the view that the formal curriculum is essentially *assessment-driven*. Accordingly, students are prone to assert that *RE doesn't count*.

It could be that both science and religion classes have made dramatic shifts from the objectivist epistemology over the past 15 or so years, and that the similarity in environment scale scores is a positive outcome. However, there is little evidence to show that science teachers have shifted from the objectivist mode to a more constructivist approach to teaching (Tobin, 1990a; von Glasersfeld, 1987). The constructivist view is that "knowledge resides in individuals; that knowledge cannot be transferred intact from the head of a teacher to the heads of students. The student tries to make sense of what is taught by trying to fit it with his/her experience" (Lorsbach & Tobin, 1992, p. 9). Although it is becoming fashionable for some science teachers to adopt the rhetoric of constructivism, few science teachers are genuine constructivists. Secondary science teachers face increasing accountability pressures and time constraints, and the adoption of information-transmission approaches is understandable but lamentable.

By contrast, far more flexibility with time and assessment is afforded to teachers and students in religion classes in Australian Catholic schools. If constructivism requires learners to be given time to think and make sense of what they are learning (Tobin, 1990b), then religion classes are well placed to demonstrate a more constructivist learning environment. It would appear that objectivist epistemology is entrenched in the teaching of religion as well as science. In the present study, the low score on the Individualisation scale supports this general view.

The comparison of boy and girl perceptions of the same coeducational class showed that, apart from Individualisation, girls perceived the class more favourably than boys. This pattern of gender differences in perceptions of the actual environment are similar to the findings of preferred environment studies conducted in Australia and the United States (Lawrenz, 1987; Owens, 1985; Owens & Straton, 1980). These studies revealed that girls preferred a classroom environment characterised by Cooperation whereas boys preferred more Individualisation and Competition in the classroom. The findings of the present study are important because they provide benchmark evidence to show that, in Australian Catholic and Government schools, girls are more likely to perceive their classes more favourably than boys.

CONCLUSION

This paper contributes to classroom environment research by describing the development, validation and use of an instrument for assessing classroom environment in Catholic secondary school classrooms. The final form of the instrument met the four development

criteria of consistency with the literature, coverage of Moos's three general categories, salience to stakeholders and economy of scoring. Moreover, applications of the instrument described in this paper illustrated its utility. The instrument is important in Catholic education because its dimensions have been developed to reflect the purpose of contemporary Australian Catholic education. Clearly, the directions of the differences between school types in this study are not consistent with the literature and are cause for some concern by Catholic school teachers and administrators. As Catholic schools become more responsive to the norms of wider society and less responsive to the tradition and authority of the Catholic church, there is a real risk that their initial conceptualisation as schools that are fundamentally different will be lost.

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